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EVOLUTION'S MOST ROMANTIC MOMENT

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THERE is a small stream in northern Illinois which, since the last great ice sheet retreated, has cut its unhurried way through some forty feet of glacial alluvium and has thus exposed in its present bed the shales and rocks of the old Coal Period which was the witness of Nature's most important moment. The old Indian name "Mazon" still clings to the stream and it has become famous the world over for the wonder and importance of the relics of ancient animal and plant life found along its banks. Locally the creek is held in contempt, by the grown-ups as a breeding place for mosquitoes, and by the small boys because it is nowhere deep enough for a good

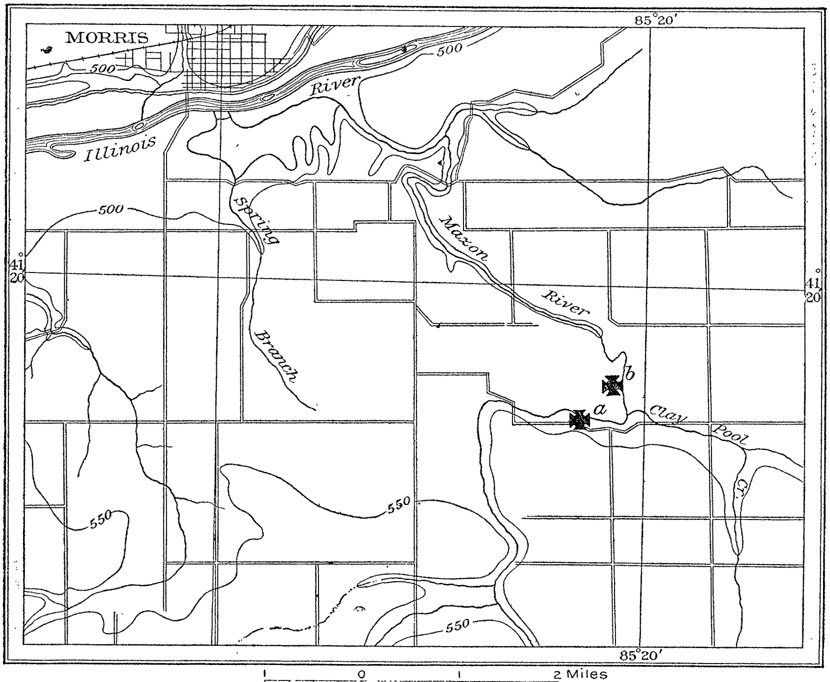

FIG. 1. TOPOGRAPHIC MAP OF THE MAZON CREEK, ILLINOIS, REGION, showing location of Fossil Beds.

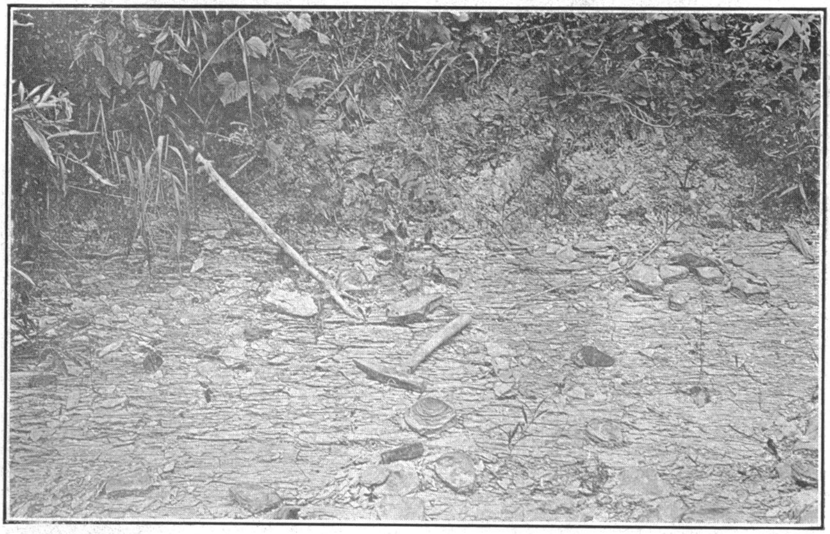

FIG. 2. A shale bed in the banks of Mazon Creek, from which the fossil-bearing nodules were washed out. One is just sliding down the bank at the head of the hammer. Nodules thus exposed are split by the action of the frost, or by a blow of the collector's hammer, thus revealing the enclosed fossil. Only twelve of these nodules have contained four-footed animals, in seventy-five years collecting at this place.

swimming hole; fishing is almost unknown. The winding ripples, however, offer pleasant prospects to the casual visitor and its banks hold untold treasures for the student of ancient life.

The water has worn its placid way for centuries through several feet of grayish red shales, washing out an occasional rounded nodule, which, becoming exposed to the action of the frost, cracks and thus discloses its buried treasure of Paleozoic insect, centipede, spider, fish, leaf or, very, very rarely, *the remains of the first animal with legs,* which resembles so very closely our present mud-puppies. These small creatures are the oldest known land vertebrates and represent that most interesting and romantic phase when the animals which later resulted in the evolution of man were beginning to come out of the water and live a portion of their existence on land.

It is difficult for us, in these noisy times, to realize the stillness which pervaded all nature in this period when the animals were first considering an existence away from the water. It took eons of time for them to develop sufficient courage for a complete separation from their ancestral home. There were no voices of insect or bird in these later Paleozoic days, and the stillness was complete save for the wind, the rain and the thunder. The clouds doubtless sailed as quietly and as beauti-

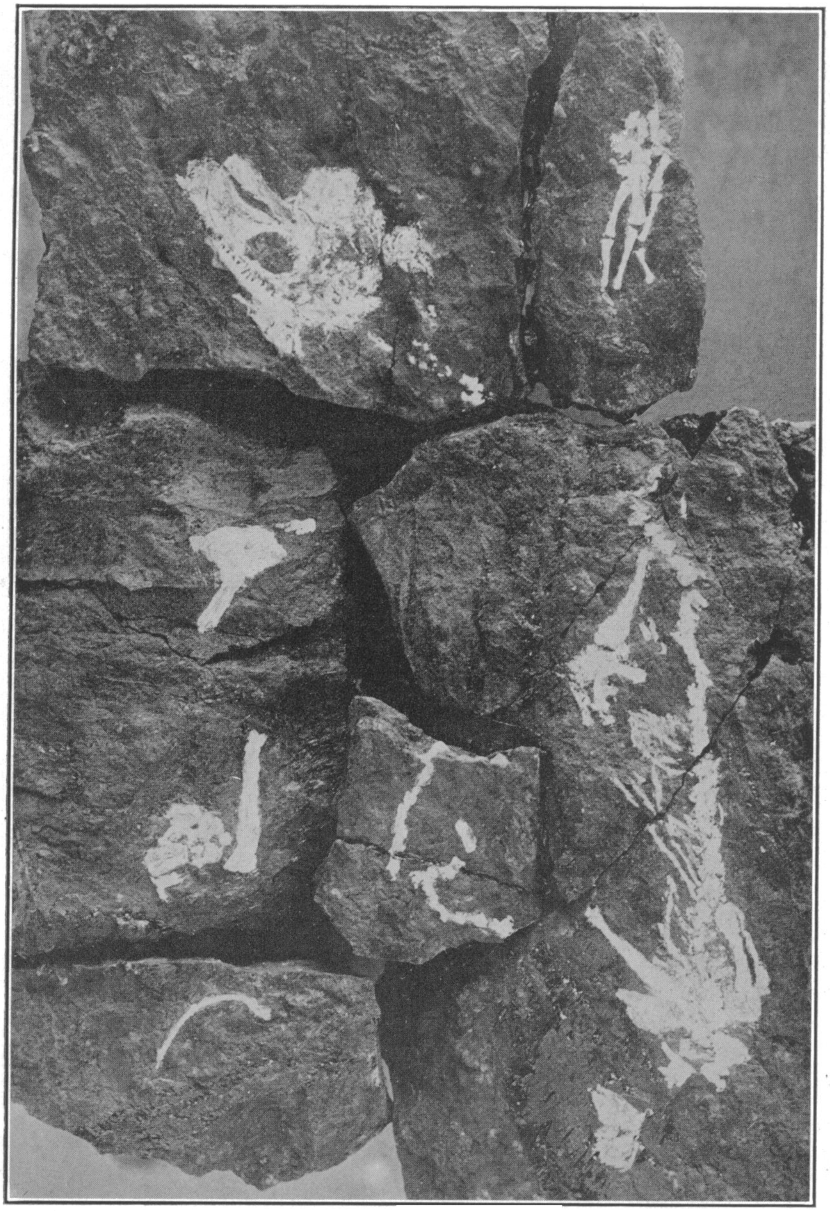

FIG. 3. Nature tried the experiment of evolving four-footed animals in several places at about the same time. Some of her experiments are preserved for us in the shape of fossils. The one here shown was found by Sir William Dawson in a petrified tree trunk, on the coast of Nova Scotia. This animal had lost the ability to swim and is thus a more highly developed stage of animal life than the ones found at Mazon Creek.

fully through the sky then as now. The sun shone as brightly, and the rain was as pure and refreshing. There were no grasses for the raindrops to glisten on and no trees, save only those of the fern type, where the wind might moan an unheard complaint. The little creatures of the shore, the highest type of animal of their day, neither heard nor spoke. They were made aware of the approach of danger in the water by the sense organs in their skin, and on land they trusted to their large black eyes which set well exposed on top of their flat heads.

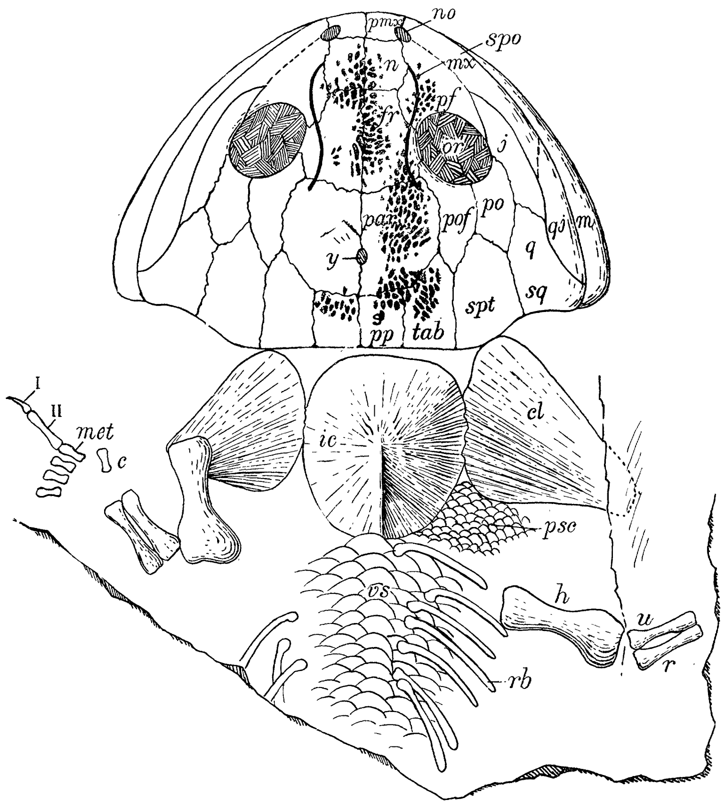

Fig. 4. At Linton, Ohio, in the Old Diamond mine, now long since abandoned, were discovered great numbers of the first animals with legs, though at a higher stage of development than those from Mazon Creek. The presence of scales on this fellow, who had a length of some 10 inches, do not indicate a fish ancestry, as might be supposed, but is rather an adaptation to aquatic life and similar structures are found even among many of the large reptiles of later times. The fossils of the coal are thus of the greatest importance in helping us to understand Evolution's most romantic moment.

These little fellows, whose fossils we find on the banks of Mazon Creek, were timid adventurers and stayed close to the shore of the old brackish bayou, the relics of which have come down to delight modern students in their attempt to unravel the story of the old world. None of them exceeded eight or at most ten inches in length, and they were often surpassed in size by even the centipedes which crawled through the swamps with them. But in potentialities of development these small knights of the Paleozoic surpassed anything the world had ever seen or will ever see again. They marked an important stage in this great progression of vertebrate life which has resulted in the development of the animate world as it is to-day. Had they not ventured on to the land, what to-day would have been the result? Would the world still be peopled only by denizens of the sea, or would the impulse for a higher life have come at some later time? This impulse for a higher existence than one in the water, the desire to more freely, enjoy the sun and the earth, must have been very strongly implanted in the Paleozoic creatures, for shortly after, some 10,000,000 years later, the same experiment was tried in far remote places. Illinois, however, may claim the credit of being the present spot where millions of years ago the vertebrate animals, in their desire to develop into higher beings, first began that most romantic

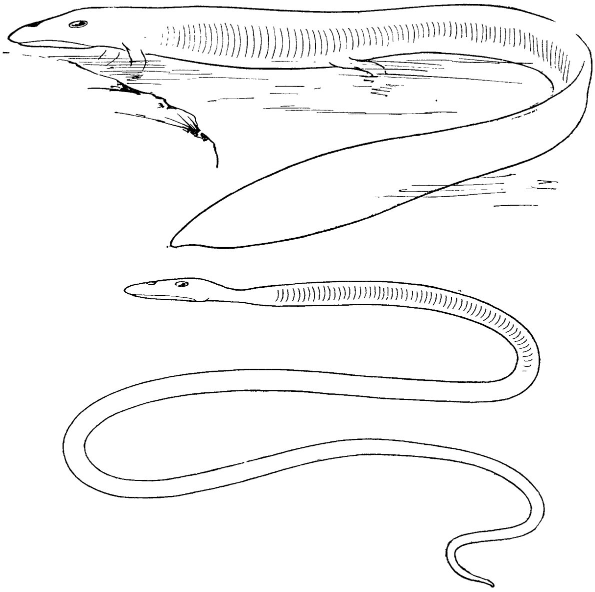

FIG. 5. At the same time, and in the same lake perhaps, with the development of four-legged animals which were found at Linton, Ohio, lived creatures which had either very weak legs, as shown in the upper figure, or none at all, as shown below. The latter form had lost all vestiges of both limbs and limb girdles.

movement in all evolution. Rather we should say that we see here, doubtless, the result of millions of years of preparation for, and a tendency toward, a stage which was in progress when the world was still quite young.

Evidently this experiment was a success, for we find the fossils of kindred forms in old tree stumps which have been washed out of the sea-cliffs of Nova Scotia. These animals, though still small, were extremely active. Their bodies were covered with hard scales. They had sharp claws on their feet, and could not swim, for they had progressed so far in the passage from water to land that they had all but forgotten the water, and when they fell into the rain water within an old hollow sigillarian stump, they drowned and were thus fossilized to tell the tale to-day. An intermediate stage is found in Ohio, where they were inhabitants of an old swampy lake in which they lived by thousands in various stages of development. Discoveries in other parts of the world add but little to our general conception of this parting point in evolution. While fossils from Africa, Europe, Australia and India delight our eye and stir our interest in their diversity of structure, none approaches so closely to that parting of the ways as the tiny creatures found on the banks of Mazon Creek, in Illinois. We, as human beings, are interested in their aspirations, for, had they not aspired to a life on land, many, many millions of years ago, evolution would have missed its most romantic moment and the world to-day would not be what it is. The development of our race might have been deferred many millenniums.